REMARKS

Claims 11-27 are pending in the present application. No new matter has been presented.

Notice of References Cited

Applicants note that the Nemoto reference (US 6,596,430) was not added to the Notice of References cited (Form PTO-892). Applicants request that Nemoto be added to the Notice of References cited.

Claim Rejections - 35 U.S.C. § 103

Claims 11-19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over **Hamrock** (US 6,063,522) in view of **Sano** (US 2002/0086191), **Tsutsumi** (US 2002/0182507), and **Nemoto** (US 6,596,430); claims 20 and 21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over **Hamrock** in view of **Sano**, **Tsutsumi** and **Nemoto**, and further in view of **Takahashi** (US 5,766,791); claims 22 and 23 were rejected under 35 U.S.C. §103(a) as being unpatentable over **Hamrock** in view of **Sano**, **Tsutsumi** and **Nemoto**, and further in view of **Sakai** (US 2002/0122984); and claims 24-27 were rejected under 35 U.S.C. § 103(a) as being unpatentable over **Hamrock** in view of **Sano**, **Tsutsumi**, **Nemoto** and **Sakai**, and further in view of **Takahashi**.

Favorable reconsideration is requested.

Applicants respectfully submit that Hamrock in view of Sano, Tsutsumi and Nemoto does not teach or suggest:

> the non-aqueous solvent has one or more than one compound represented by the following general formula (1), the one or more than one compound being a main component of the non-aqueous solvent, and the main component being [90% or] 97% to less than 100% in volume of the non-aqueous solvent,

$X\text{-}(O\text{-}C_2H_4)n\text{-}O\text{-}Y$ (1)

(where X and Y are independently a methyl group or an ethyl group. and n is 2 or 3)

as recited in claim 11 or 12.

The Office Action acknowledges that Hamrock in view of Sano does not disclose a subsidiary component, specifically polypropylene, of the non-aqueous electrolyte in the amount of less than 100% by volume. (Office Action, page 3.) The Office Action cites Tsutsumi and Nemoto for teaching these features.

Tsutsumi discloses a chain ether compound such as 1,2-dimethoxyethane (DME), 1,2-diethoxyethane (DEE), ethoxymethoxyethane (EME). (Paragraph 97.) However, all of the above, DME DEE and EME, are compounds that include only one ethylene glycol unit, and Tsutsumi does not disclose or suggest a compound including 2 or 3 ethylene glycol units such as the compound represented by the general formula (1) of the invention recited in claims 11 and 12.

In addition, Tsutsumi discloses that it is preferred to use as a solvent a mixture solvent of a cyclic carbonate and a chain carbonate or a mixture solvent of a cyclic carbonate a chain carbonate and an aliphatic carboxylic acid ester. (Paragraph 97.) However, all of the compounds such as diethylene glycol dimethyl ether (DGM) and triethylene glycol dimethyl ether (TRGM) in addition to the above DME, DEE and EME are chain ether compounds and not a chain carbonate.

Nemoto discloses to set the highest elevated temperature T_2 to be not higher than the boiling temperature of the non-aqueous electrolyte solution (claims 1 and 3). However, it does

not disclose or suggest that a chain ether compound is used as a mixture solvent. Moreover, Nemoto discloses:

> Another embodiment of the transportation method is actualized by setting the highest elevated temperature T_2 to be the lowest temperature in the boiling points of main components of the non-aqueous electrolyte solution. That is based on the fact that evaporation of the components contained in small amounts is expected to not cause internal pressure increase to result in immediate rupture of the battery. The meaning of main components of the nonaqueous electrolyte solution does not practically mean components contained in some defined % or higher. For example, it is a matter of course, the main components mean both solvents A and B in the case of a mixture containing a solvent A and a solvent B in equal amounts and the solvent A is supposed to be a main component even in the case of 20% of the solvent A and 80% of the solvent B. On the contrary, the main component is supposed to be solely the solvent A in the case of a solvent mixture containing 98% of the solvent A and 2% of the solvent B. Whether a component is included in the main components or not can be determined by considering that a component which is contained only in an amount of 1/20 or lower relative to any other components is not a main component and such a condition can be employed as the determination standard.

(Col. 8, line 48 to col. 9, line 3, emphasis added.) In short, Nemoto discloses the definition of the term "the main component" meaning that solvent B can not be considered as the main component when the solvent A is 98% and the solvent B is 2%. However, this reference does not disclose that it is preferred to use 98% of the solvent A and 2% of the solvent B. Moreover, in Nemoto, a mixture solvent with such a mixture ratio is not actually prepared.

In addition, considering the suggestion of Nemoto to prevent evaporation and boiling during transportation, one skilled in the art would design a safer battery by adopting a solvent with a higher boiling point as a main component of the electrolytic solvent so as to raise the highest elevated temperature (T_2) and the temperature (t) at which the battery becomes unstable due to heat. In other words, in the case of mixing propylene carbonate (PC) and the compound

of the above general formula (1) (for example, DGM, TRGM), one skilled in the art would use high-boiling PC (boiling point: 241 °C) as the main component instead of a low-boiling solvent such as DGM (boiling point: 162 °C) or TRGM (boiling point 216 °C).

Furthermore, in claim 11, the volume content of a subsidiary component of cyclic carbonate and/or cyclic lactone is only 3% or less, which is less 1/20 (5%). Therefore, the above subsidiary component does not correspond to the main component defined in Nemoto.

Therefore, the configuration recited in claims 11 and 12 in which a low-boiling chain ether compound is used as a main component and high-boiling PC is used as a subsidiary component would not have been obvious based on the combination of cited references.

For at least the foregoing reasons, claims 11-27 are patentable over the cited references. Accordingly, withdrawal of the rejection of claims 11-27 is hereby solicited.

In view of the above remarks, Applicants submit that the claims are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP

/Andrew G. Melick/

Andrew G. Melick
Attorney for Applicants
Registration No. 56,868
Telephone: (202) 822-1100
Facsimile: (202) 822-1111

AGM/adp